

**NEWPORT BAY FECAL COLIFORM TMDL
ANNUAL DATA REPORT**

September 2001

Prepared and submitted on behalf of:

**The County of Orange
and
The Cities of Costa Mesa, Irvine, Lake Forest,
Newport Beach, Orange, Santa Ana, and Tustin**

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1.0 INTRODUCTION

The fecal coliform TMDL and a January 7, 2000 letter from the Santa Ana Regional Water Quality Control Board (RWQCB) (**Appendix A**) require the County of Orange and the Cities of Costa Mesa, Irvine, Lake Forest, Newport Beach, Orange, Santa Ana and Tustin to submit an annual data report by September 1st of each year. The report is intended to summarize the bacteriological data collected in Newport Bay for the year and evaluate compliance with bacterial quality objectives established by the RWQCB. This report responds to these requirements and includes data from April 1, 2000 through March 31, 2001.

2.0 ROUTINE MONITORING PROGRAM (TMDL Section 3.a.ii.a)

2.1 Data Collection

Section 3.a.ii.a of the TMDL requires the County and watershed cities to implement a routine monitoring program to determine compliance with bacterial quality objectives in the Bay. At a minimum, routine monitoring is to include the collection of five samples per 30-day period at a total of 35 stations as identified in **Figure 1**. Analysis for total coliform, fecal coliform, and enterococci is required for all samples. The County and watershed cities have identified the current monitoring program implemented by the Orange County Health Care Agency (HCA) as the basis for satisfying the requirements of the routine monitoring program.

The fecal coliform TMDL has established fecal coliform water quality objectives as follows:

Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log (geometric) mean of 200 MPN/100 ml, nor shall more than 10 percent of the total samples during any 30-day period exceed 400 MPN/100 ml to be achieved by December 30, 2013.

For the purposes of evaluating compliance with these objectives, E. coli was initially used as a surrogate for fecal coliform. The relationship between E. coli and fecal coliform indicators is imprecisely defined. It is generally accepted, however, that E. coli bacteria comprise approximately 80-90 percent of the fecal coliform measured in a typical surface water sample. Following a request from the RWQCB, the monitoring program was revised to measure fecal coliform, rather than E. coli to correspond with the requirements of the TMDL. The change over in methodology occurred on March 19, 2001, meaning that all but two weeks of data in this annual data report are based on E. coli.

2.2 Data Analysis

Tables 1 and 2 include the bacteriological data collected in Newport Bay and selected tributaries from April 1, 2000 through March 31, 2001.

- **Table 1** presents both the raw data from HCA's Bacteriological Monitoring Program and compliance with one part of the two-part TMDL standard for fecal coliform. Highlighted cells in this table represent samples exceeding 400 organisms per 100 ml.
- **Table 2** presents the geometric means for E. coli based on five samples from the previous 30-day period. Highlighted cells represent samples exceeding a 30-day geometric mean of 200 organisms per 100 ml.

The data show that E. coli levels were highest at three tributary stations (San Diego Creek at Campus, Santa Ana Delhi and Big Canyon Wash), Newport Dunes North in the Upper Bay, and four stations in the western corner of the Lower Bay (43rd Street Beach, 38th Street Beach, 33rd Street Channel and Newport Boulevard Bridge). All of the above mentioned stations exceeded the 30-day geometric mean of 200 organisms per 100 ml on ten or more occasions. Two of these stations (43rd Street Beach and 33rd Street Channel) have been permanently posted by HCA. None of the 27 remaining stations exceeded the 30-day geometric mean standard on more than four occasions.

Some seasonal variation in E. coli levels is evident. While E. coli levels were consistently high throughout the year at most tributary stations, Lower and Upper Bay stations tended to be higher during the summer months as well as during storm events from January through March.

It should be noted that four stations were periodically not sampled in the past year due to either low tide conditions (Vaughn's Launch and Ski Zone), inaccessible access roads (Vaughn's Launch, Ski Zone and Big Canyon Creek), or water diversion (Backbay Drive Pipe).

2.3 Data Revisions

Appendix B includes corrections made to the geometric mean data for four tributary stations from the 1999-2000 annual report. Corrections were required due to a data entry error.

Figure 1
BACTERIOLOGICAL WATER SAMPLING STATIONS
IN NEWPORT BAY

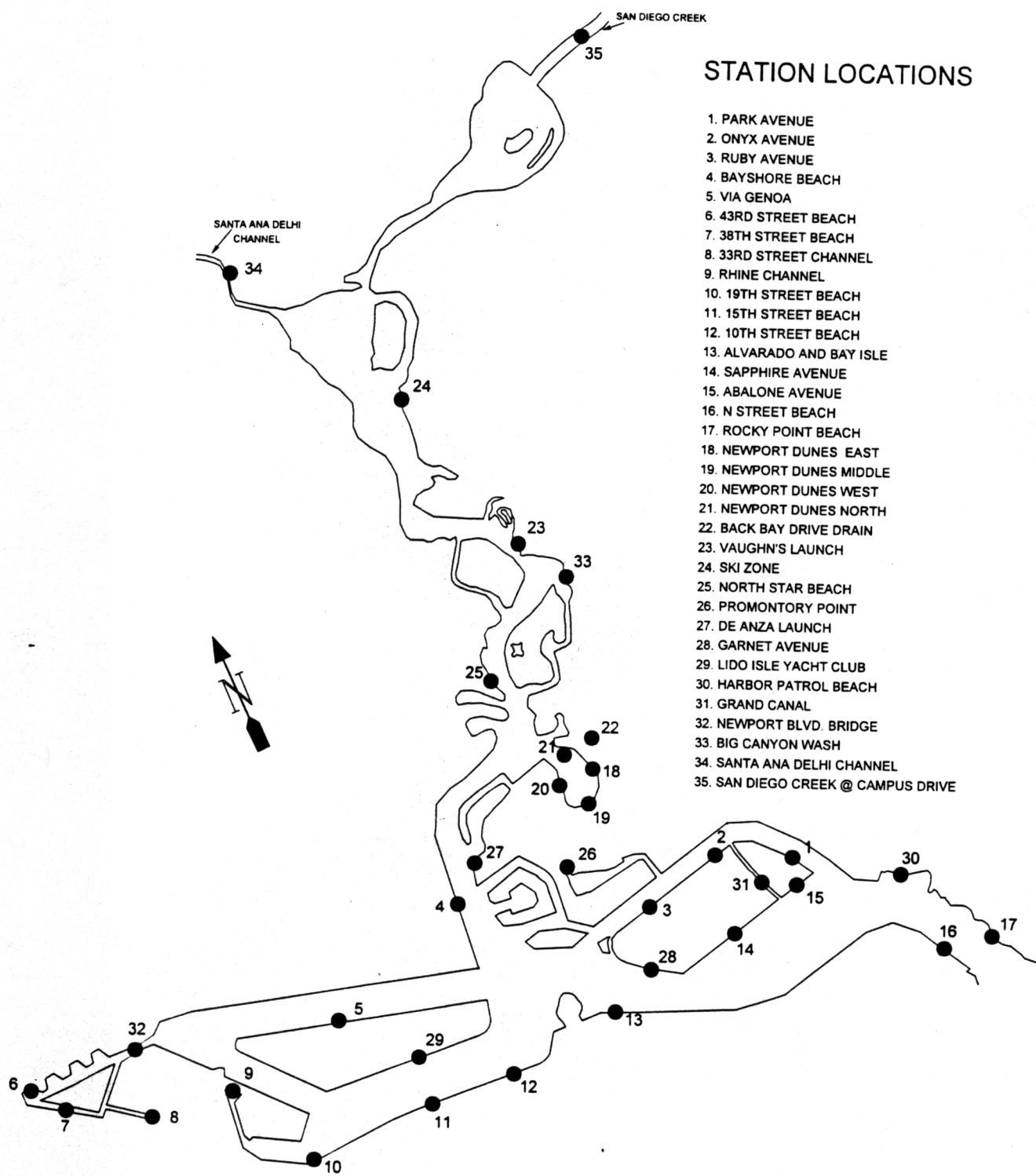


Table 1
BACTERIOLOGICAL SAMPLING RESULTS
FOR NEWPORT BAY

FISCAL YEAR 2000-01
 (Concentrations in MPN/100ml)

	UPPER BAY STATIONS											
	Newport Dunes - Middle			Newport Dunes - West			Newport Dunes - East			Newport Dunes - North		
	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT
4/3/00	20	10	<10	20	10	<10	<20	74	<10	40	20	10
4/10/00	<20	10	<10	<20	10	10	<20	10	<10	170	63	10
4/17/00	<20	20	30	70	20	20	<20	158	<10	80	41	<10
4/24/00	40	10	10	80	41	30	40	52	30	170	240	132
5/1/00	20	41	<10	800	63	41	20	52	<10	170	1224	<10
5/8/00	40	<10	10	40	<10	<10	230	41	228	20	20	10
5/15/00	<20	<10	<10	20	<10	<10	<20	31	<10	40	20	10
5/22/00	<20	10	<10	500	798	<10	300	131	<10	<20	20	<10
5/30/00	40	10	<10	80	95	<10	20	20	20	300	116	<10
6/5&6/00	<20	<10	<10	<20	<10	<10	40	20	41	170	909	278
6/12/00	130	10	30	<20	10	<10	<20	31	<10	20	74	20
6/19/00	20	<10	<10	40	52	10	90	121	41	170	1211	52
6/26/00	<20	<10	<10	20	<10	10	80	122	52	72	20	10
7/5/00	<20	<10	10	270	120	<10	20	<10	20	70	1223	52
7/10/00	20	<10	256	170	146	41	210	31	31	700	295	41
7/17&19/00	<20	20	<10	40	20	<10	40	52	20	20	1086	20
7/24&26/00	130	119	<10	40	<10	<10	80	74	<10	<20	95	30
7/31&8/2/00	20	<10	<10	3000	243	10	<20	63	<10	<20	107	31
8/7/00	<20	<10	<10	<20	<10	<10	40	20	10	130	413	10
8/14/00	<20	<10	<10	<20	10	<10	40	97	10	20	269	<10
8/21/00	<20	20	<10	40	173	141	40	108	<10	270	1313	171
8/28/00	70	96	31	20	10	10	170	1130	10	130	645	20
9/5/00	<20	<10	<10	700	10	31	140	<10	<10	20	<10	<10
9/12/00	20	<10	<10	130	74	52	<20	41	<10	40	<10	<10
9/18/00	<20	<10	<10	<20	20	<10	20	41	<10	20	496	185
9/25/00	5000	216	30	3000	233	10	16000	253	74	5000	1106	63
10/2&3/00	20	<10	<10	<20	10	<10	20	30	74	230	256	158
10/10&11/00	2200	359	74	500	256	84	9000	265	131	3000	265	20
10/17/00	40	31	<10	<20	10	10	20	<10	161	800	166	10
10/25/00	70	20	<10	130	41	41	210	259	10	<20	<10	10
11/2/00	300	20	20	300	51	10	500	<10	<10	1100	96	<10
11/7/00	170	209	1236	230	63	158	500	605	187	<20	10	10
11/14/00	40	<10	<10	20	<10	10	<20	20	<10	80	30	10
11/21/00	<20	<10	20	40	<10	<10	70	146	10	<20	<10	10
11/28/00	<20	10	10	40	<10	<10	40	20	<10	20	10	<10
12/5/00	170	203	20	800	471	41	20	20	30	500	345	134
12/12/00	40	<10	10	80	10	31	20	63	<10	130	31	<10
12/19/00	20	20	<10	40	10	20	<20	<10	30	80	31	10
12/26/00	20	10	<10	<20	10	10	<20	10	<10	20	20	10
1/3/01	20	10	<10	40	<10	<10	1700	1414	<10	20	<10	10
1/9/01	>16000	3654	15531	>16000	2755	19863	>16000	4884	19863	>16000	5794	17329
1/17/01	800	122	669	3000	2046	4352	330	74	98	300	74	160
1/23/01	300	20	51	210	63	52	70	10	10	20	41	<10
1/30/01	5000	<10	31	2200	52	<10	1300	52	<10	1400	30	<10
2/6/01	230	31	20	40	41	10	170	52	<10	<20	10	10
2/14/01	>16000	1935	5794	>16000	1860	8164	>16000	1450	5475	>16000	2098	8164
2/21/01	1100	583	41	240	134	52	500	51	134	500	109	41
2/27/01	>16000	1333	5172	>16000	1529	5794	>16000	1100	3076	>16000	1334	4611
3/6/01	500	10	52	300	31	10	800	31	63	230	20	74
3/13/01	70	10	<10	80	20	<10	20	<10	<10	140	31	<10
3/19/01	70	50	150	170	130	<10	510	300	90	100	190	10
3/26/01	30	30	20	40	50	10	100	50	10	70	40	10

Sampling results possibly influenced by rainfall (within 72 hours of 0.1 inch of precipitation)

Sampling results exceeding 400 organisms/100 ml

TC = Total Coliforms LA = Lab Accident
 EC = E. coli NS = Not Sampled
 ENT = Enterococci

The monitoring program was revised to measure fecal coliform, rather than E. coli to correspond with TMDL requirements. The effective date of this change was March 19, 2001.

Table 1
BACTERIOLOGICAL SAMPLING RESULTS
FOR NEWPORT BAY

FISCAL YEAR 2000-01
 (Concentrations in MPN/100ml)

	UPPER BAY STATIONS											
	Vaughn's Launch			Ski Zone			North Star Beach			De Anza		
	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT
4/3/00	70	20	52	<20	<10	<10	<20	<10	<10	20	<10	10
4/10/00	80	121	214	NS	NS	NS	<20	<10	<10	40	10	<10
4/17/00	80	52	<10	<20	<10	10	<20	<10	<10	>16000	1391	10
4/24/00	5000	98	10	130	122	84	140	10	<10	70	10	<10
5/1/00	70	10	30	110	20	10	40	<10	10	40	10	<10
5/8/00	700	364	<10	NS	NS	NS	<20	<10	<10	20	10	<10
5/15/00	<20	10	20	<20	<10	10	<20	<10	10	20	10	10
5/22/00	20	10	<10	<20	<10	>24192	<20	10	<10	230	52	10
5/30/00	40	41	20	20	20	>24192	20	<10	<10	20	153	<10
6/5&6/00	<20	<10	63	<20	<10	<10	300	10	20	<20	<10	10
6/12/00	20	73	<10	20	<10	230	<20	<10	<10	20	<10	<10
6/19/00	<20	10	10	<20	<10	<10	<20	<10	<10	20	31	<10
6/26/00	110	221	20	NS	NS	NS	<20	20	<10	<20	<10	10
7/5/00	20	20	<10	<20	31	98	80	10	20	20	<10	20
7/10/00	300	382	41	NS	NS	NS	800	10	<10	<20	<10	<10
7/17&19/00	<20	10	<10	<20	<10	<10	20	10	41	40	<10	<10
7/24&26/00	NS	NS	NS	NS	NS	NS	<20	10	31	<20	41	<10
7/31&8/2/00	<20	10	<10	<20	41	30	20	52	<10	20	41	10
8/7/00	<20	121	<10	NS	NS	NS	40	10	<10	40	20	10
8/14/00	<20	10	256	<20	<10	<10	<20	<10	<10	<20	20	<10
8/21/00	<20	<10	10	<20	30	98	<20	<10	<10	40	31	<10
8/28/00	<20	41	<10	<20	10	<10	20	20	<10	80	388	86
9/5/00	<20	10	10	220	73	74	<20	10	<10	<20	20	<10
9/12/00	20	51	<10	20	20	83	<20	<10	<10	20	10	10
9/18/00	130	106	<10	<20	51	51	<20	10	<10	700	63	109
9/25/00	2400	120	10	>16000	450	10	800	40	<10	300	108	20
10/2&3/00	20	63	63	70	121	97	40	10	<10	20	332	<10
10/10&11/00	9000	350	134	3000	845	52	20	20	<10	130	197	>24192
10/17/00	20	<10	10	20	31	<10	<20	10	<10	<20	<10	10
10/25/00	80	122	31	<20	10	10	20	52	10	<20	10	<10
11/2/00	1700	256	52	2400	74	148	800	20	20	500	<10	10
11/7/00	300	179	677	NS	NS	NS	20	<10	10	130	10	97
11/14/00	40	52	<10	80	10	<10	20	10	<10	<20	10	<10
11/21/00	230	74	10	230	41	71	40	10	10	<20	10	<10
11/28/00	130	148	<10	<20	20	10	<20	<10	10	<20	10	<10
12/5/00	130	262	31	NS	NS	NS	300	776	10	<20	10	<10
12/12/00	70	74	31	40	10	10	<20	<10	<10	40	20	<10
12/19/00	3000	1050	52	NS	NS	NS	20	31	30	40	10	20
12/26/00	20	31	10	20	10	<10	<20	10	<10	<20	<10	<10
1/3/01	NS	NS	NS	NS	NS	NS	20	20	<10	<20	<10	10
1/9/01	5000	244	697	>16000	7701	11199	16000	512	1354	5000	151	292
1/17/01	NS	NS	NS	NS	NS	NS	5000	187	5172	1100	86	98
1/23/01	300	52	52	90	31	10	20	<10	20	40	<10	10
1/30/01	1700	<10	31	NS	NS	NS	>16000	448	272	1700	41	20
2/6/01	130	41	62	300	41	74	20	<10	20	<20	20	<10
2/14/01	>16000	2224	15531	NS	NS	NS	>16000	2924	6131	>16000	2723	6488
2/21/01	800	148	148	>16000	669	2142	240	98	132	170	10	10
2/27/01	NS	NS	NS	NS	NS	NS	>16000	2723	9804	>16000	988	3654
3/6/01	NS	NS	NS	NS	NS	NS	800	404	594	300	<10	74
3/13/01	170	20	20	130	52	20	500	97	132	20	10	<10
3/19/01	11000	590	100	140	10	20	360	10	<10	10	<10	<10
3/26/01	200	120	130	30	<10	10	30	10	40	10	<10	10

Sampling results possibly influenced by rainfall (within 72 hours of 0.1 inch of precipitation)

Sampling results exceeding 400 organisms/100 ml

TC = Total Coliforms **LA** = Lab Accident
EC = E. coli **NS** = Not Sampled
ENT = Enterococci

The monitoring program was revised to measure fecal coliform, rather than E. coli to correspond with TMDL requirements. The effective date of this change was March 19, 2001.

Table 1
BACTERIOLOGICAL SAMPLING RESULTS
FOR NEWPORT BAY

FISCAL YEAR 2000-01
 (Concentrations in MPN/100ml)

	Bayshore Beach			UPPER BAY STATIONS											
	TC	EC	ENT												
4/3/00	40	10	<10												
4/10/00	40	10	10												
4/17/00	<20	<10	<10												
4/24/00	300	31	122												
5/1/00	40	10	<10												
5/8/00	170	201	52												
5/15/00	<20	<10	20												
5/22/00	80	10	20												
5/30/00	170	<10	10												
6/5&6/00	170	62	<10												
6/12/00	270	95	<10												
6/19/00	40	10	<10												
6/26/00	9000	20	110												
7/5/00	70	10	41												
7/10/00	300	51	10												
7/17&19/00	70	20	<10												
7/24&26/00	<20	161	<10												
7/31&8/2/00	130	31	41												
8/7/00	5000	20	836												
8/14/00	70	41	<10												
8/21/00	170	63	<10												
8/28/00	20	120	<10												
9/5/00	80	20	<10												
9/12/00	40	20	116												
9/18/00	170	228	10												
9/25/00	700	96	<10												
10/2&3/00	20	10	30												
10/10&11/00	40	10	10												
10/17/00	40	20	<10												
10/25/00	20	52	20												
11/2/00	230	30	<10												
11/7/00	80	20	85												
11/14/00	20	<10	<10												
11/21/00	80	<10	20												
11/28/00	20	10	<10												
12/5/00	<20	10	<10												
12/12/00	<20	<10	<10												
12/19/00	70	41	<10												
12/26/00	20	10	<10												
1/3/01	130	10	20												
1/9/01	3000	80	187												
1/17/01	110	10	20												
1/23/01	80	<10	<10												
1/30/01	2400	74	<10												
2/6/01	40	<10	20												
2/14/01	>16000	2987	10462												
2/21/01	170	20	10												
2/27/01	16000	878	4352												
3/6/01	1300	10	20												
3/13/01	20	<10	<10												
3/19/01	10	<10	10												
3/26/01	20	<10	10												

 Sampling results possibly influenced by rainfall (within 72 hours of 0.1 inch of precipitation)

 Sampling results exceeding 400 organisms/100 ml

TC = Total Coliforms LA = Lab Accident
 EC = E. coli NS = Not Sampled
 ENT = Enterococci

The monitoring program was revised to measure fecal coliform, rather than E. coli to correspond with TMDL requirements. The effective date of this change was March 19, 2001.

Table 1
BACTERIOLOGICAL SAMPLING RESULTS
FOR NEWPORT BAY

FISCAL YEAR 2000-01
 (Concentrations in MPN/100ml)

	TRIBUTARY STATIONS											
	San Diego Creek - Campus Dr.			Santa Ana Delhi Channel			Big Canyon Creek			Backbay Drive Pipe		
	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT	TC	EC	ENT
4/3/00	2755	<10	<10	4884	173	121	24192	84	173	4106	20	135
4/10/00	12033	41	61	5172	74	10	19863	148	74	4106	259	97
4/17/00	12033	20	451	19863	9804	61	>24192	457	41	7270	20	114
4/24/00	>24192	446	1086	3255	121	441	>24192	443	743	>24192	160	134
5/1/00	>24192	203	95	>24192	327	63	17329	85	243	3873	10	97
5/8/00	>24192	934	183	>24192	191	85	24192	121	134	1785	31	52
5/15/00	10462	110	211	>24192	173	218	>2492	132	10	3873	20	31
5/22/00	24192	52	134	>24192	41	798	>24192	906	185	19863	108	738
5/30/00	24192	238	181	>24192	309	675	24192	31	30	8164	52	368
6/5&6/00	11199	41	<10	>24192	187	1500	4611	74	246	>24192	206	97
6/12/00	>24192	52	10	>24192	211	135	1793	74	228	24192	20	95
6/19/00	>24192	63	41	>24192	181	175	>24192	110	122	7701	97	201
6/26/00	>24192	20	<10	>24192	197	288	>24192	465	727	15531	185	576
7/5/00	>24192	10	31	>24192	546	269	>24192	246	85	>24192	199	288
7/10/00	24192	31	<10	>24192	269	341	>24192	132	110	>24192	1483	6131
7/17&19/00	1300	10	<10	3000	228	187	1700	134	110	2400	63	474
7/24&26/00	24192	74	40	>24192	723	3784	>24192	63	41	>24192	31	1182
7/31&8/2/00	1700	10	10	5000	187	195	800	504	171	2400	74	2014
8/7/00	>24192	189	134	>24192	717	30	15531	285	86	317	<10	547
8/14/00	>24192	85	189	>24192	657	472	>24192	189	256	19863	146	419
8/21/00	>24192	195	213	>24192	391	228	>24192	246	148	>24192	31	254
8/28/00	>24192	85	230	>24192	>24192	377	>24192	238	110	>24192	84	2247
9/5/00	>24192	211	84	>24192	399	327	>24192	160	72	>24192	226	19863
9/12/00	>24192	359	211	>24192	464	1169	>24192	187	160	3654	97	1989
9/18/00	3000	323	168	>16000	379	>24192	>24192	278	110	5000	20	717
9/25/00	>24192	5794	52	>24192	8164	>24192	>24192	148	120	13000	10	382
10/2&3/00	>24192	733	1059	>24192	359	1137	>24192	145	134	4884	31	1090
10/10&11/00	>24192	487	132	>24192	175	2700	>24192	1274	591	4352	106	259
10/17/00	17389	395	108	>24192	546	206	15531	301	183	2602	<10	179
10/25/00	17329	175	74	>24192	145	754	12997	1222	41	10	<10	<10
11/2/00	>24192	839	435	24191	109	158	6488	94	52	5172	<10	41
11/7/00	>24192	323	2359	24192	240	4804	3873	132	84	7270	480	5475
11/14/00	12997	145	158	9208	134	259	3076	121	20	1664	<10	95
11/21/00	5794	41	52	15531	135	496	1211	313	135	15531	41	426
11/28/00	1396	31	10	24192	855	158	1450	146	63	1211	41	85
12/5/00	3282	41	20	>24192	512	337	5172	409	97	10462	41	354
12/12/00	2613	20	<10	>24192	146	8164	7270	121	41	3873	620	41
12/19/00	LA	20	558	LA	536	>24192	LA	<10	160	LA	20	1187
12/26/00	2247	41	61	>24192	275	842	9804	374	20	4352	10	20
1/3/01	1842	30	30	12997	384	130	2755	228	74	2613	10	1019
1/9/01	>24192	9208	11199	>24192	>24192	9804	>24192	5172	4352	4352	20	181
1/17/01	19863	246	158	24192	187	1054	NS	NS	NS	1723	10	86
1/23/01	9208	41	98	>24192	408	318	19863	243	121	8164	<10	52
1/30/01	>24192	464	448	>24192	336	489	1254	51	52	1396	<10	52
2/6/01	4611	305	63	11199	110	5172	4611	288	218	3448	<10	97
2/14/01	>24192	5475	>24192	>24192	5172	11199	>24192	2851	6131	>24192	368	3448
2/21/01	>16000	1145	410	9000	134	3654	1700	209	122	500	10	63
2/27/01	>16000	4106	9208	16000	5172	4611	NS	NS	NS	5000	1334	2613
3/6/01	>16000	9208	5172	>16000	19863	>24192	NS	NS	NS	2100	504	759
3/13/01	>24192	288	74	12997	187	3076	3076	134	63	NS	NS	NS
3/19/01	640	130	30	15600	400	130	770	330	450	NS	NS	NS
3/26/01	4000	70	40	3200	400	150	3400	100	300	NS	NS	NS

 Sampling results possibly influenced by rainfall (within 72 hours of 0.1 inch of precipitation)

 Sampling results exceeding 400 organisms/100 ml

TC = Total Coliforms LA = Lab Accident
 EC = E. coli NS = Not Sampled
 ENT = Enterococci

The monitoring program was revised to measure fecal coliform, rather than E. coli to correspond with TMDL requirements. The effective date of this change was March 19, 2001.

Table 2
THIRTY DAY GEOMETRIC MEAN*
FOR E. COLI BACTERIA IN NEWPORT BAY
FISCAL YEAR 2000-01

MONITORING STATION LOCATIONS
 (Organisms per 100 ml)

LOWER BAY STATIONS

	43rd Street Beach	38th Street Beach	33rd Street Channel	Lido Yacht Club Beach	Via Genoa Beach	Newport Blvd. Bridge
4/3/00	51	44	18	39	50	30
4/10/00	42	23	16	10	26	14
4/17/00	50	23	16	14	26	10
4/24/00	72	17	16	14	26	17
5/1/00	34	10	17	14	11	23
5/8/00	47	13	69	14	11	23
5/18/00	34	13	121	14	11	23
5/22/00	49	21	264	10	11	26
5/30/00	39	34	452	13	11	19
6/5/00	74	65	934	13	10	14
6/12/00	82	94	359	13	10	14
6/19/00	114	236	196	13	10	19
6/26/00	62	225	147	15	10	25
7/5/00	161	598	258	11	10	23
7/10/00	260	569	149	11	10	26
7/17&19/00	803	533	183	13	10	56
7/24&26/00	1611	547	255	13	10	89
7/31&8/2/00	4268	610	226	17	13	245
8/7/00	4824	242	75	33	13	695
8/14/00	4774	225	67	33	13	928
8/21/00	2682	236	57	29	13	432
8/28/00	2900	232	60	29	19	335
9/5/00	2154	223	89	19	14	82
9/12/00	1502	265	118	10	14	35
9/18/00	814	265	173	13	14	23
9/25/00	744	227	173	21	18	37
10/2&3/00	329	90	132	25	14	28
10/10/00	193	63	103	25	14	28
10/16&17/00	82	40	89	25	14	20
10/24/00	89	35	46	21	19	20
11/2/00	42	31	33	16	15	12
11/6/00	43	39	33	14	13	16
11/14/00	32	34	20	14	13	19
11/21/00	40	27	24	14	13	32
11/28/00	51	18	24	12	10	32
12/5/00	44	16	27	11	11	40
12/12/00	28	16	18	11	22	25
12/19/00	32	16	18	11	31	21
12/26/00	26	16	13	11	31	16
1/3/01	11	16	14	11	31	51
1/9/01	25	30	47	23	64	122
1/17/01	34	36	129	23	34	177
1/23/01	29	36	154	38	23	177
1/30/01	37	36	183	43	27	141
2/6/01	67	60	127	57	31	111
2/14/01	72	64	103	70	35	148
2/21/01	101	42	61	81	53	255
2/27/01	315	136	146	119	145	661
3/6/01	588	312	310	176	215	2559
3/13/01	673	189	248	132	188	1137
3/19/01	488	75	240	62	82	650
3/26/01	260	99	181	54	53	325

* Geometric means are based on 5 samples from the preceding 30-day period



Sampling results on these dates may have been influenced by rainfall (within 72 hours of 0.1 inch of precipitation)



30 day geometric mean > 200 organisms/100 mL based on 5 or more samples per 30 day period



Results based on less than 5 samples from the previous 30-day period due to low tide or inaccessible access roads

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Table 2
THIRTY DAY GEOMETRIC MEAN*
FOR E. COLI BACTERIA IN NEWPORT BAY
FISCAL YEAR 2000-01

MONITORING STATION LOCATIONS
 (Organisms per 100 ml)

LOWER BAY STATIONS

	Rhine Channel	19th Street Beach	15th Street Beach	10th Street Beach	Alvarado/ Bay Isle Beach	N Street Beach
4/3/00	33	21	34	16	64	102
4/10/00	26	10	15	10	14	53
4/17/00	21	23	15	13	11	14
4/24/00	48	41	10	14	13	14
5/1/00	48	41	10	14	13	14
5/8/00	42	41	10	14	14	10
5/18/00	23	51	10	14	19	14
5/22/00	36	30	15	11	35	14
5/30/00	20	17	29	10	30	22
6/5/00	20	19	29	10	35	25
6/12/00	39	19	29	10	32	25
6/19/00	77	31	29	10	24	18
6/26/00	49	24	19	10	22	24
7/5/00	39	40	15	10	22	23
7/10/00	83	35	20	10	28	20
7/17&19/00	42	54	26	15	28	20
7/24&26/00	27	30	57	20	37	20
7/31&8/2/00	53	45	65	20	22	18
8/7/00	91	26	61	20	28	15
8/14/00	53	26	61	20	19	15
8/21/00	138	29	49	13	17	15
8/28/00	138	25	25	14	20	17
9/5/00	86	24	25	14	23	15
9/12/00	51	24	23	14	21	14
9/18/00	54	34	17	16	52	14
9/25/00	39	38	43	36	86	14
10/2&3/00	40	47	37	26	61	13
10/10/00	51	45	51	30	67	13
10/16&17/00	59	45	39	38	67	10
10/24/00	56	46	39	33	27	10
11/2/00	29	45	21	19	25	14
11/6/00	50	94	21	25	21	14
11/14/00	31	71	15	22	17	14
11/21/00	50	111	15	24	26	18
11/28/00	63	94	20	24	26	18
12/5/00	143	58	19	18	18	12
12/12/00	98	36	28	16	32	16
12/19/00	463	36	28	23	56	16
12/26/00	254	23	35	16	32	17
1/3/01	161	18	26	16	32	20
1/9/01	136	25	26	32	74	34
1/17/01	127	23	18	32	41	32
1/23/01	27	33	16	22	24	40
1/30/01	40	50	12	22	24	35
2/6/01	66	57	12	22	24	30
2/14/01	93	91	27	32	29	48
2/21/01	67	65	41	64	29	38
2/27/01	175	113	102	158	64	68
3/6/01	235	101	135	228	74	68
3/13/01	143	88	135	228	74	68
3/19/01	52	34	51	83	29	39
3/26/01	69	34	33	35	29	52

* Geometric means are based on 5 samples from the preceding 30-day period



Sampling results on these dates may have been influenced by rainfall (within 72 hours of 0.1 inch of precipitation)



30 day geometric mean > 200 organisms/100 mL based on 5 or more samples per 30 day period



Results based on less than 5 samples from the previous 30-day period due to low tide or inaccessible access roads

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Table 2
THIRTY DAY GEOMETRIC MEAN*
FOR E. COLI BACTERIA IN NEWPORT BAY
FISCAL YEAR 2000-01

MONITORING STATION LOCATIONS
 (Organisms per 100 ml)

LOWER BAY STATIONS

	Garnet Avenue Beach	Ruby Avenue Beach	Sapphire Avenue Beach	Grand Canal	Abalone Avenue Beach
4/3/00	26	18	23	21	18
4/10/00	11	10	14	11	20
4/17/00	10	13	11	10	20
4/24/00	10	15	17	10	20
5/1/00	10	15	19	11	20
5/8/00	17	15	19	11	20
5/18/00	24	15	21	11	10
5/22/00	24	11	21	11	10
5/30/00	27	10	14	18	13
6/5/00	36	10	21	16	24
6/12/00	27	11	64	22	24
6/19/00	19	11	77	22	24
6/26/00	30	11	107	30	24
7/5/00	41	11	134	19	18
7/10/00	45	11	90	22	12
7/17&19/00	36	10	41	18	17
7/24&26/00	41	13	37	29	25
7/31&8/2/00	26	14	41	21	33
8/7/00	25	14	37	43	52
8/14/00	34	14	54	58	42
8/21/00	76	14	81	51	44
8/28/00	108	16	99	48	53
9/5/00	281	16	101	48	40
9/12/00	183	16	117	29	29
9/18/00	153	21	139	25	33
9/25/00	106	33	84	40	31
10/2&3/00	81	23	73	27	20
10/10/00	46	23	46	39	29
10/16&17/00	58	23	35	31	31
10/24/00	36	18	17	31	31
11/2/00	23	13	19	19	27
11/6/00	19	13	18	31	24
11/14/00	13	11	18	27	22
11/21/00	10	11	18	34	17
11/28/00	10	11	18	26	15
12/5/00	10	10	13	36	20
12/12/00	10	11	10	25	20
12/19/00	10	11	13	20	15
12/26/00	10	11	13	16	15
1/3/01	10	11	13	22	15
1/9/01	18	21	17	22	10
1/17/01	18	24	17	19	10
1/23/01	18	34	13	19	10
1/30/01	18	34	13	22	10
2/6/01	18	34	13	16	18
2/14/01	28	50	27	31	46
2/21/01	28	38	27	31	46
2/27/01	68	57	64	73	106
3/6/01	90	66	85	101	122
3/13/01	90	66	85	101	68
3/19/01	37	25	31	37	31
3/26/01	49	25	31	37	31

* Geometric means are based on 5 samples from the preceding 30-day period

Sampling results on these dates may have been influenced by rainfall (within 72 hours of 0.1 inch of precipitation)

30 day geometric mean > 200 organisms/100 mL based on 5 or more samples per 30 day period

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 Data approved: LW (8/16/01)

Table 2
THIRTY DAY GEOMETRIC MEAN*
FOR E. COLI BACTERIA IN NEWPORT BAY
FISCAL YEAR 2000-01

MONITORING STATION LOCATIONS
 (Organisms per 100 ml)

LOWER BAY STATIONS

	Park Avenue Beach	Onyx Avenue Beach	Promontory Point Channel	Harbor Patrol Beach	Rocky Point Beach
4/3/00	18	24	15	71	11
4/10/00	10	11	10	46	11
4/17/00	13	17	13	58	19
4/24/00	13	14	13	67	17
5/1/00	13	14	13	94	17
5/8/00	18	18	13	33	23
5/18/00	22	25	13	33	27
5/22/00	17	28	38	27	18
5/30/00	17	28	38	58	18
6/5/00	17	32	38	41	18
6/12/00	13	37	38	41	13
6/19/00	10	45	38	51	13
6/26/00	10	35	18	35	16
7/5/00	18	35	18	14	18
7/10/00	25	30	18	14	18
7/17&19/00	33	24	18	14	18
7/24&26/00	48	26	18	21	16
7/31&8/2/00	48	27	10	28	15
8/7/00	34	27	10	45	13
8/14/00	28	27	10	50	15
8/21/00	21	24	10	83	31
8/28/00	19	21	11	56	31
9/5/00	19	18	11	42	23
9/12/00	15	18	11	35	23
9/18/00	15	21	11	47	27
9/25/00	23	26	11	28	13
10/2&3/00	17	17	10	39	20
10/10/00	17	28	10	66	23
10/16&17/00	17	28	11	50	29
10/24/00	15	62	11	57	22
11/2/00	13	50	11	57	28
11/6/00	13	50	11	33	18
11/14/00	13	25	11	35	16
11/21/00	13	25	10	35	13
11/28/00	13	10	10	28	13
12/5/00	11	10	10	47	11
12/12/00	11	10	10	59	11
12/19/00	11	10	10	41	11
12/26/00	11	10	10	41	15
1/3/01	14	10	10	27	15
1/9/01	14	16	19	27	15
1/17/01	14	16	19	37	19
1/23/01	14	16	19	39	32
1/30/01	19	16	19	54	24
2/6/01	15	64	26	83	24
2/14/01	35	113	35	157	52
2/21/01	35	113	35	92	42
2/27/01	77	244	76	151	51
3/6/01	91	517	76	234	51
3/13/01	91	144	55	202	51
3/19/01	35	65	21	100	20
3/26/01	35	93	21	100	45

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30 day geometric mean > 200 organisms/100 mL based on 5 or more samples per 30 day period



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Table 2
THIRTY DAY GEOMETRIC MEAN*
FOR E. COLI BACTERIA IN NEWPORT BAY
FISCAL YEAR 2000-01

MONITORING STATION LOCATIONS (Organisms per 100mL)									TRIBUTARY STATIONS				
UPPER BAY STATIONS									TRIBUTARY STATIONS				
	Newport Dunes - Middle	Newport Dunes - West	Newport Dunes - East	Newport Dunes - North	Vaughn's Launch	Ski Zone	North Star Beach	De Anza	Bayshore Beach	San Diego Creek - Campus Dr.	Santa Ana Delhi Channel	Big Canyon Creek	Backbay Drive Pipe
4/3/00	55	62	128	55	125	48	34	38	46	116	179	282	54
4/10/00	25	25	56	35	89	10	16	14	16	50	111	172	66
4/17/00	22	25	46	47	89	10	10	27	10	34	279	219	76
4/24/00	17	15	48	64	59	23	10	27	13	47	299	222	100
5/1/00	15	22	50	109	42	22	10	27	13	59	346	185	44
5/8/00	15	22	45	109	74	29	10	27	23	147	353	198	48
5/15/00	15	22	56	86	45	22	10	27	23	179	418	194	29
5/22/00	13	46	54	75	32	22	10	14	23	217	140	222	40
5/30/00	13	54	44	65	27	14	10	24	18	192	169	131	32
6/5&6/00	10	38	37	61	27	12	10	24	26	139	151	127	59
6/12/00	10	38	35	79	20	11	10	24	23	78	154	115	54
6/19/00	10	52	46	180	20	11	10	30	23	70	155	111	74
6/26/00	10	22	45	180	37	12	11	22	26	58	213	97	83
7/5/00	10	23	39	288	32	13	11	13	26	31	238	147	108
7/10/00	10	39	43	230	66	15	11	13	25	29	256	165	160
7/17&19/00	11	45	47	394	44	15	11	13	18	21	260	186	202
7/24&26/00	19	32	43	237	64	18	11	13	32	21	343	166	161
7/31&8/2/00	19	61	38	331	30	23	14	18	35	19	340	169	134
8/7/00	19	37	43	267	46	20	14	20	40	34	359	174	73
8/14/00	19	22	54	262	19	16	14	23	38	41	429	187	46
8/21/00	19	33	63	272	19	23	14	29	48	75	478	211	40
8/28/00	18	33	108	399	22	19	16	46	45	77	964	276	49
9/5/00	18	18	75	248	22	22	11	40	42	141	1122	219	61
9/12/00	18	26	87	118	18	21	11	34	42	161	1028	201	96
9/18/00	18	30	73	133	29	29	11	43	59	210	921	218	65
9/25/00	29	32	86	129	48	51	15	56	64	413	1692	197	52
10/2&3/00	18	32	42	107	53	83	13	54	39	636	729	178	42
10/10&11/00	38	62	81	206	107	136	15	85	34	752	618	269	36
10/17/00	47	41	61	362	78	149	15	85	34	766	639	296	23
10/25/00	54	48	88	166	80	107	21	59	25	678	527	399	20
11/2/00	34	35	46	102	93	75	18	37	20	460	222	364	20
11/7/00	62	51	84	53	114	66	18	18	23	391	205	357	35
11/14/00	30	27	50	34	78	22	16	10	23	307	194	223	22
11/21/00	24	27	86	20	117	23	16	10	20	195	147	225	29
11/28/00	21	20	51	20	121	28	11	10	14	138	210	147	38
12/5/00	34	31	59	25	122	20	24	10	11	75	286	197	51
12/12/00	18	22	37	32	102	17	24	11	10	43	259	194	53
12/19/00	21	22	33	32	186	20	30	11	13	29	341	118	61
12/26/00	21	22	19	37	156	13	30	11	13	29	393	122	46
1/3/01	21	22	45	37	158	10	34	11	13	29	335	133	35
1/9/01	37	31	134	64	156	92	32	20	20	85	725	222	30
1/17/01	62	89	139	77	200	278	57	26	20	141	761	258	13
1/23/01	62	129	139	81	73	134	45	26	15	163	721	572	11
1/30/01	62	179	193	88	50	489	97	35	23	264	751	348	11
2/6/01	77	238	100	88	48	214	84	40	23	420	584	369	11
2/14/01	68	220	78	72	83	36	120	72	47	379	429	318	21
2/21/01	93	127	72	78	93	95	105	47	54	515	402	292	21
2/27/01	216	241	186	156	108	166	323	117	131	1295	667	306	55
3/6/01	216	217	167	144	238	166	316	88	88	2354	1509	556	120
3/13/01	172	188	120	180	187	187	498	77	88	2327	1678	431	223
3/19/01	83	111	88	111	120	70	160	25	28	1101	1006	210	189
3/26/01	46	91	87	91	112	17	101	25	24	630	1252	164	820

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Data approved: LW (8/16/01)

Appendix A

**Letter from the Santa Ana Regional Water
Quality Control Board Dated January 7, 2000
Including Attachment to Resolution No. 99-10
(Basin Plan TMDL for Fecal Coliform)**

Available in Hard Copy Only

Appendix B

Corrected Data for Four Tributary Stations April 1, 1999 through July 26, 1999

Available in Hard Copy Only